



OCT 7 1994

TO: A/Administrator

FROM: AD/Chairman, Program Management Council

SUBJECT: Independent Annual Review (IAR) Report for Super Lightweight Tank (SLWT) Program

The IAR report for the SLWT was presented to the Program Management Council (PMC) on July 26, 1994. The attendee list is enclosed. Although the IAR had been conducted on May 18 and 19, 1994, the report had been updated in June with current information acquired during meetings at the Marshall Space Flight Center on June 8-10, 1994.

The SLWT is mandatory for the successful implementation of the plan for assembly of the international Space Station at 51.6° inclination. The accrued payload weight benefits are necessary to offset a significant part of the additional performance required for the high inclination. The first SLWT flight article currently supports the Space Station First Element Launch in December 1997. The SLWT development schedule is success-oriented with very little contingency.

A significant underrun against budgeted levels was predicted for FY 1994/FY 1995, approximately \$50 million, with little or no apparent degradation in work accomplished. This funding will roll forward for the purchase of materials or be allocated to other Code M areas.

Some delay has resulted from a problem producing aluminum-lithium alloy (2195) with acceptable material properties. This was unanticipated since suitable material had been produced as recently as 1991. The definitization of the process for producing an alloy with acceptable material properties remains the major concern.

There have been three independent reviews of the SLWT:

- (1) Nonadvocate review, January 1993,
- (2) In-house (nonprogram) Martin Marietta review, April-June 1994, and
- (3) External NASA review, April-June 1994.

Currently, all casting and rolling is complete, and the results of material properties testing is expected in early September. Initial test results are encouraging, and casting of ingots for the Aluminum-Lithium Test Article (ALTA) is planned for the first week in September.

The PMC expressed considerable interest in the tank verification approach, using the ALTA, since the Martin Marietta review had recommended a full-size structural test article. This was deemed infeasible since the original test facility has been dismantled, and the press of schedule will not allow for new construction. The ALTA is a shortened (20-foot barrel section) hydrogen tank with full-size domes, gores, etc.

There were also questions regarding the existence of a Development Flight Instrumentation (DFI) on the first flight tank, since historically, DFI has added significant weight.

The team also presented information that the goal of 8000-pound weight savings is in jeopardy by 300 to 500 pounds.

In conclusion, the team recommended that a followup review be conducted at an appropriate time in the near future.

Code M responded as follows:

- (1) Schedule risk was acknowledged, but multishift operation is available as a contingency.
- (2) Welding was offered as a concern, but significant progress has been made with the assistance of outside experts. It was stated that the issue has essentially been resolved.
- (3) The revised test program has been approved by the independent review teams, and a risk assessment of not pursuing a full structural test article was performed.
- (4) There currently is no DFI in the baseline SLWT program. Work is underway, however, to provide instrumentation for a tanking test on the pad on the first flight article.

A challenge to the method of tracking cost growth, etc., was postulated. A minor percentage growth in external tank cost, i.e., 2-percent, could prompt a cancellation review.

To address the PMC concerns, the following actions will be undertaken:

- (1) Another IAR will be conducted late in the calendar year after the SLWT preliminary design review but, no later than January 1995.
- (2) Code Q will formalize a recommendation on the revised ALTA test program by October 31, 1994.
- (3) The method for tracking SLWT cost in the Program Commitment Agreement will be evaluated by the Program Project Management Working Group by November 30, 1994.
- (4) Code M will provide a traceability matrix for all independent review recommendations to the PMC by October 15, 1994.

The PMC recognized the Agency's dependency on this program. With the above actions, the PMC recommends that the SLWT program continue as planned.


J. R. Dailey

Enclosure

PROGRAM MANAGEMENT COUNCIL
Super Lightweight Tank (SLWT) Program
July 26, 1994

ATTENDEES

AD/Gen. Dailey
AT/Mr. Mott
ABA/Mr. Lee
ABB/Mr. Ross
B/Mr. Peterson
CF/Mr. Levine
D/Dr. Robins
G/Mr. Frankle
HS/Mr. Fournier
J/Ms. Cooper
M/Mr. Wisniewski
O/Mr. Force
Q/Mr. Gregory
S/Mr. Diaz
U/Dr. Nicogossian
Y/Mr. Townsend

Enclosure